

=> d his ful

(FILE 'HOME' ENTERED AT 12:50:21 ON 04 NOV 2009)

FILE 'HCAPLUS' ENTERED AT 12:50:51 ON 04 NOV 2009

L1 1 SEA SPE=ON ABB=ON PLU=ON US20080226986/PN  
D L1 ALL  
SAV L1 KWA517/A  
SEL L1 RN

FILE 'REGISTRY' ENTERED AT 12:52:01 ON 04 NOV 2009

L2 8 SEA SPE=ON ABB=ON PLU=ON (28408-24-4/BI OR 28408-25-5/  
BI OR 7429-90-5/BI OR 7439-93-2/BI OR 7440-44-0/BI OR  
7782-42-5/BI OR 863184-63-8/BI OR 863184-65-0/BI)  
D SCA  
SAV L2 KWA517A/A

FILE 'LREGISTRY' ENTERED AT 12:56:38 ON 04 NOV 2009

L3 STR  
L4 STR

FILE 'REGISTRY' ENTERED AT 13:03:11 ON 04 NOV 2009

L5 50 SEA SSS SAM L4

FILE 'LREGISTRY' ENTERED AT 13:04:13 ON 04 NOV 2009

L6 STR L4

FILE 'REGISTRY' ENTERED AT 13:25:09 ON 04 NOV 2009

L7 50 SEA SSS SAM L6  
D QUE STAT L7  
D QUE STAT L5

FILE 'LREGISTRY' ENTERED AT 13:27:15 ON 04 NOV 2009

L8 STR L6

FILE 'REGISTRY' ENTERED AT 13:39:33 ON 04 NOV 2009

L9 50 SEA SSS SAM L8

L10 14238 SEA SSS FUL L8

L11 4 SEA SPE=ON ABB=ON PLU=ON L10 AND L2  
SAV L10 KWA517C/A

FILE 'LREGISTRY' ENTERED AT 13:42:35 ON 04 NOV 2009

L12 STR L8  
L13 SCR 2040

L14 6 SEA SUB=L10 SSS SAM L12 AND L13  
D SCA

L15 237 SEA SUB=L10 SSS FUL L12 AND L13

FILE 'HCAPLUS' ENTERED AT 13:47:00 ON 04 NOV 2009  
L16 222 SEA SPE=ON ABB=ON PLU=ON L15

FILE 'ZCAPLUS' ENTERED AT 13:47:29 ON 04 NOV 2009  
L17 QUE SPE=ON ABB=ON PLU=ON ?CATHODE?

FILE 'HCAPLUS' ENTERED AT 13:47:43 ON 04 NOV 2009  
L18 3 SEA SPE=ON ABB=ON PLU=ON L16 (L) L17

FILE 'ZCAPLUS' ENTERED AT 13:48:03 ON 04 NOV 2009  
L19 QUE SPE=ON ABB=ON PLU=ON ?NITROXYL?

FILE 'HCAPLUS' ENTERED AT 13:48:20 ON 04 NOV 2009  
L20 11 SEA SPE=ON ABB=ON PLU=ON L16 (L) L19  
L21 3 SEA SPE=ON ABB=ON PLU=ON L16 AND L17

FILE 'ZCAPLUS' ENTERED AT 13:49:16 ON 04 NOV 2009  
L22 QUE SPE=ON ABB=ON PLU=ON BATTERY# OR BATTERIES#

FILE 'HCAPLUS' ENTERED AT 13:49:33 ON 04 NOV 2009  
L23 3 SEA SPE=ON ABB=ON PLU=ON L16 (L) L22  
L24 4 SEA SPE=ON ABB=ON PLU=ON L16 AND L22  
L25 12 SEA SPE=ON ABB=ON PLU=ON L24 OR L23 OR L21 OR L20 OR  
L18

FILE 'LREGISTRY' ENTERED AT 13:51:44 ON 04 NOV 2009

FILE 'HCAPLUS' ENTERED AT 13:54:17 ON 04 NOV 2009  
L26 45 SEA SPE=ON ABB=ON PLU=ON L11  
L27 44 SEA SPE=ON ABB=ON PLU=ON L26 NOT L25

FILE 'ZCAPLUS' ENTERED AT 13:56:02 ON 04 NOV 2009  
L28 QUE SPE=ON ABB=ON PLU=ON ?CARBON? (3A) ?CONDUCT?

FILE 'HCAPLUS' ENTERED AT 13:56:27 ON 04 NOV 2009  
L29 0 SEA SPE=ON ABB=ON PLU=ON L16 AND L28  
L30 41 SEA SPE=ON ABB=ON PLU=ON L16 AND L19  
L31 8 SEA SPE=ON ABB=ON PLU=ON L30 (3A) ?POLYMER?  
L32 8 SEA SPE=ON ABB=ON PLU=ON L31 NOT L25

FILE 'LREGISTRY' ENTERED AT 13:59:33 ON 04 NOV 2009

FILE HOME

FILE HCAPLUS

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storage of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 4 Nov 2009 VOL 151 ISS 19

FILE LAST UPDATED: 3 Nov 2009 (20091103/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

HCAplus now includes complete International Patent Classification (I reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

During November, try the new LSUS format of legal status information in the CA/CAplus family databases for free! Complete details on the number of free displays and other databases participating in this offer appear in NEWS 10.

FILE REGISTRY

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3

DICTIONARY FILE UPDATES: 2 NOV 2009 HIGHEST RN 1190920-68-3

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 26, 2009.

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

FILE LREGISTRY  
LREGISTRY IS A STATIC LEARNING FILE

CAS INFORMATION USE POLICIES, ENTER HELP USAGETERMS FOR DETAILS.

FILE ZCPLUS

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storage of this information, without the prior written consent of CAS is strictly prohibited.

FILE COVERS 1907 - 4 Nov 2009 VOL 151 ISS 19

FILE LAST UPDATED: 3 Nov 2009 (20091103/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Aug 2009

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Aug 2009

ZCplus now includes complete International Patent Classification (I reclassification data for the third quarter of 2009.

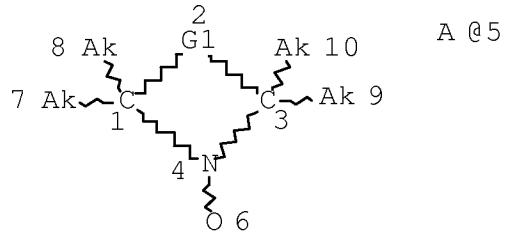
CAS Information Use Policies apply and are available at:

<http://www.cas.org/legal/infopolicy.html>

This file contains CAS Registry Numbers for easy and accurate substance identification.

During November, try the new LSUS format of legal status information in the CA/Cplus family databases for free! Complete details on the number of free displays and other databases participating in this offer appear in NEWS 10.

=> d que stat 110  
 L8 STR



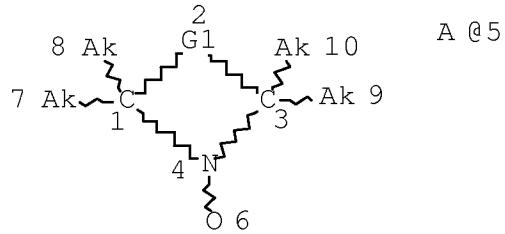
REP G1=(2-4) 5  
 NODE ATTRIBUTES:  
 CONNECT IS E1 RC AT 6  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
 L10 14238 SEA FILE=REGISTRY SSS FUL L8

100.0% PROCESSED 420233 ITERATIONS 14238 ANSWERS  
 SEARCH TIME: 00.00.17

=> d que stat 115  
 L8 STR

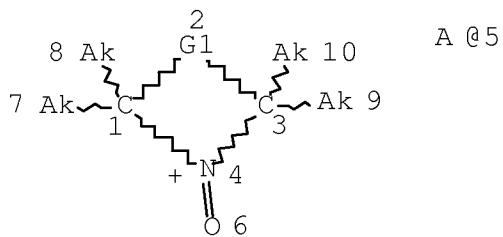


REP G1=(2-4) 5  
 NODE ATTRIBUTES:

CONNECT IS E1 RC AT 6  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
 L10 14238 SEA FILE=REGISTRY SSS FUL L8  
 L12 STR



REP G1=(2-4) 5  
 NODE ATTRIBUTES:  
 CHARGE IS \*+ AT 4  
 CONNECT IS E1 RC AT 6  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE  
 L13 SCR 2040  
 L15 237 SEA FILE=REGISTRY SUB=L10 SSS FUL L12 AND L13

100.0% PROCESSED 318 ITERATIONS 237 ANSWERS  
 SEARCH TIME: 00.00.01

=> d 125 1-12 bib abs hitstr hitind  
 YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:y

L25 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2008:81515 HCAPLUS [Full-text](#)  
 DN 148:284662  
 TI Carbon-carbon bond activation of  
 2,2,6,6-tetramethyl-piperidine-1-oxyl by a RhII metalloradical: a  
 combined experimental and theoretical study  
 AU Chan, Kin Shing; Li, Xin Zhu; Dzik, Wojciech I.; de Bruin, Bas  
 CS Department of Chemistry, The Chinese University of Hong Kong,  
 Shatin, New Territories, Hong Kong, Peop. Rep. China  
 SO Journal of the American Chemical Society (2008), 130(6), 2051-2061  
 CODEN: JACSAT; ISSN: 0002-7863  
 PB American Chemical Society  
 DT Journal  
 LA English  
 OS CASREACT 148:284662  
 AB Reaction of the stable radical,  
 2,2,6,6-tetramethyl-piperidine-1-oxyl with Rh(II) meso-  
 tetramesitylporphinate proceeds mainly as C-C-bond activation (CCA)  
 and Me transfer, giving methylrhodium(III) porphinate and 2,2,6-  
 trimethyl-2,3,4,5-tetrahydropyridine N-oxide. A competitive minor  
 carbon-hydrogen bond activation (CHA) channel produces 1-hydroxy-  
 2,2,6,6-tetramethylpiperidine (TEMPOH). The yield of the CCA product  
 [RhIII(tmp)Me] increased with higher temperature at the cost of the  
 CHA product TEMPOH in the temperature range 50-80°. Both the CCA and  
 CHA pathways follow second-order kinetics. The mechanism of the  
 TEMPO carbon-carbon bond activation was studied by means of kinetic  
 investigations and DFT calcns. Broken symmetry, unrestricted B3LYP  
 calcns. along the open-shell singlet surface reveal a low-energy  
 transition state (TS1) for direct TEMPO Me radical abstraction by the  
 RhII radical (SH2 type mechanism). An alternative ionic pathway,  
 with a somewhat higher barrier, was identified along the closed-shell  
 singlet surface. This ionic pathway proceeds in two sequential  
 steps: Electron transfer from TEMPO to [RhII(por)] producing the  
 [TEMPO]+[RhI(por)]- cation-anion pair, followed by net CH3+ transfer  
 from TEMPO+ to RhI with formation of [RhIII(por)Me] and (DMPO-like)  
 2,2,6-trimethyl-2,3,4,5-tetrahydro-1-pyridiniumolate. The transition  
 state for this process (TS2) is best described as an SN2-like  
 nucleophilic substitution involving attack of the dz2 orbital of  
 [RhI(por)]- at one of the CMe-Cring  $\sigma^*$  orbitals of [TEMPO]+.  
 Although the calculated barrier of the open-shell radical pathway is  
 somewhat lower than the barrier for the ionic pathway, R-DFT and U-  
 DFT are not likely comparatively accurate enough to reliably  
 distinguish between these possible pathways. Both the radical (SH2)  
 and the ionic (SN2) pathway have barriers which are low enough to  
 explain the exptl. kinetic data.

IT 1007605-39-1

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(kinetics and potential energy surface for Me and hydride transfer reactions of TEMPO **nitroxyl** radical and rhodium porphinato complexes)

RN 1007605-39-1 HCPLUS

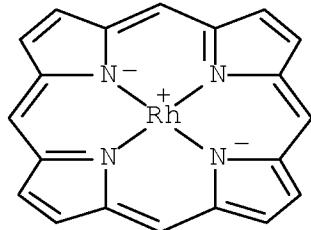
CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-,  
(SP-4-1)-[21H,23H-porphinato(2-)-  
 $\kappa$ N21, $\kappa$ N22, $\kappa$ N23, $\kappa$ N24]rhodate(1-) (1:1) (CA  
INDEX NAME)

CM 1

CRN 1007605-38-0

CMF C20 H12 N4 Rh

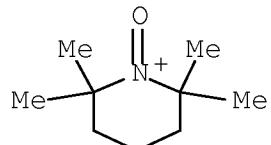
CCI CCS



CM 2

CRN 45842-10-2

CMF C9 H18 N O



CC 22-4 (Physical Organic Chemistry)  
 Section cross-reference(s): 26, 29, 78  
 IT 956578-75-9, Rhodium porphinate 1007605-36-8 1007605-37-9  
**1007605-39-1**  
 RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)  
     (kinetics and potential energy surface for Me and hydride transfer reactions of TEMPO **nitroxyl** radical and rhodium porphinato complexes)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 82 THERE ARE 82 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2007:1009278 HCAPLUS Full-text

DN 148:466171

TI Radical-scavenging activity of nitroxyl radical as an electron donor  
 AU Manda, S.; Kawaguchi, K.; Ohkubo, K.; Kawashima, T.; Kanazawa, H.;  
     Takeshita, K.; Anzai, K.; Ozawa, T.; Fukuzumi, S.; Ikota, N.;  
     Nakanishi, I.

CS Heavy-Ion Radiobiology Research Group, Research Center for Charged Particle Therapy, National Institute of Radiological Sciences, Inage-ku, Chiba, 263-8555, Japan

SO Proceedings of the Congress of the Society for Free Radical Research International, 13th, Davos, Switzerland, Aug. 15-19, 2006 (2006), 237-239 Publisher: Monduzzi Editore, Bologna, Italy.  
 CODEN: 69JTC5; ISBN: 88-7587-274-0

DT Conference

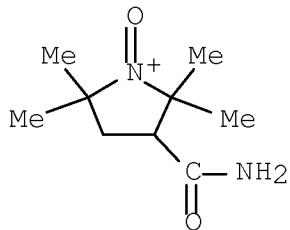
LA English

AB Cumylperoxyl radical (PhCMe<sub>2</sub>OO<sup>•</sup>), generated under irradiation of a propionitrile solution of cumene, di-tert-Bu peroxide, and O<sub>2</sub> at 193 K, was efficiently scavenged by 3-carbamoyl-2,2,5,5-tetramethylpyrrolidine- N-oxyl (CP), a frequently used spin probe for in vivo ESR measurements. The scavenging rate is found to be accelerated in the presence of Sc(OSO<sub>2</sub>CF<sub>3</sub>)<sub>3</sub>, indicating that CP scavenges PhCMe<sub>2</sub>OO<sup>•</sup> via an electron transfer from CP to PhCMe<sub>2</sub>OO<sup>•</sup> rather than via a radical-coupling reaction. The coordination of Sc<sup>3+</sup> to PhCMe<sub>2</sub>OO<sup>•</sup> thus produced decreases the free energy change of the electron transfer, resulting in the acceleration of the scavenging reaction.

IT **46147-12-0**

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (radical-scavenging activity of **nitroxyl** radical as an electron donor)

RN 46147-12-0 HCAPLUS  
 CN Pyrrolidinium, 3-(aminocarbonyl)-2,2,5,5-tetramethyl-1-oxo- (CA  
 INDEX NAME)



CC 9-5 (Biochemical Methods)  
 Section cross-reference(s): 6, 8  
 IT 4399-80-8 7175-54-4 46147-12-0  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (radical-scavenging activity of nitroxyl radical as an  
 electron donor)  
 RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:701897 HCAPLUS Full-text  
 DN 147:98690  
 TI Separator-less thin power storage devices with high performance  
 IN Morioka, Yukiko; Suguro, Masahiro; Iriyama, Jiro; Iwasa, Shigeyuki  
 PA Nec Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 25pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
PI JP 2007165054	A	20070628	JP 2005-357932	200512
				12

PRAI JP 2005-357932 20051212  
 AB The title device has a **cathode** containing a nitroxyl macromol. which shows cationic nitroxyl moiety  $=\text{N}+=\text{O}$  (I) in oxidation state and radical nitroxyl moiety  $+\text{N}-\text{O}\cdot$  (II) in reduction state for donating and accepting electrons between I and II in **cathode** reaction, an

anode containing a Li or Li alloy active mass, and a **cathode** current collector composed of a metal sheet and a conductivity-improving layer containing materials with hole-transporting group and electron-transporting group. The **cathode** is directly in contact with the anode. The device has high capacity in high c.d. and high output.

IT 942407-93-4

RL: TEM (Technical or engineered material use); USES (Uses) (cathode material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

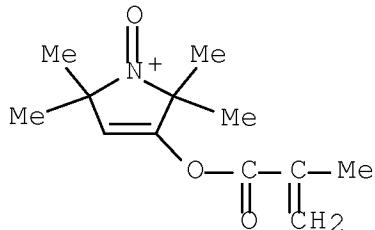
RN 942407-93-4 HCAPLUS

CN 1H-Pyrrolium, 2,5-dihydro-2,2,5,5-tetramethyl-3-[(2-methyl-1-oxo-2-propen-1-yl)oxy]-1-oxo-, homopolymer (CA INDEX NAME)

CM 1

CRN 942407-92-3

CMF C12 H18 N O3



CC 52-2 (Electrochemical, Radiation, and Thermal Energy Technology)

ST separatorless thin power storage device nitroxyl macromol

cathode; battery nitroxyl macromol cathode

lithium anode

### Battery cathodes

## Secondary batteries

(separator-less thin power storage devices having **cathode** containing nitroxyl macromol. and anode containing Li or Li alloy)

7439-93-2 Lithium uses 53680-59-4 68848-64-6

BLI: ITEM (Technical or engineered material use); USES (USES

RE. TEM (technical or engineered material use), USES (uses)  
(anode active mass; separator-less thin power storage devices  
having **cathode** containing nitroxyl macromol. and anode  
containing Li or Li alloy)

IT 28408-25-5 942407-93-4

RL: TEM (Technical or engineered material use); USES (Uses)

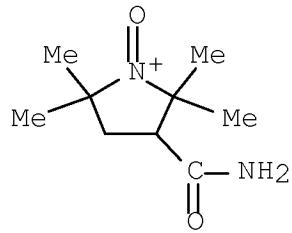
(cathode material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 7429-90-5, Aluminum, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (current collector substrate; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 15082-28-7 163226-12-8  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electron-transporting material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

IT 123847-85-8 942407-94-5  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-transporting material; separator-less thin power storage devices having cathode containing nitroxyl macromol. and anode containing Li or Li alloy)

L25 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:340260 HCAPLUS Full-text  
 DN 146:521349  
 TI Scandium ion-accelerated scavenging reaction of cumylperoxyl radical by a cyclic nitroxyl radical via electron transfer  
 AU Nakanishi, Ikuo; Kawaguchi, Kumiko; Ohkubo, Kei; Kawashima, Tomonori; Manda, Sushma; Kanazawa, Hideko; Takeshita, Keizo; Anzai, Kazunori; Ozawa, Toshihiko; Fukuzumi, Shunichi; Ikota, Nobuo  
 CS Redox Regulation Research Group, Research Center for Radiation Safety, National Institute of Radiological Sciences (NIRS), Inage-ku, Chiba, 263-8555, Japan  
 SO Chemistry Letters (2007), 36(3), 378-379  
 CODEN: CMLTAG; ISSN: 0366-7022  
 PB Chemical Society of Japan  
 DT Journal  
 LA English  
 AB A cyclic nitroxyl radical used as a spin probe efficiently scavenges cumylperoxyl radical in an aprotic medium via an electron-transfer process, which is significantly accelerated by the presence of scandium ion.  
 IT 46147-12-0  
 RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (scandium ion-accelerated scavenging reaction of cumylperoxyl radical by cyclic nitroxyl radical via electron transfer)  
 RN 46147-12-0 HCAPLUS  
 CN Pyrrolidinium, 3-(aminocarbonyl)-2,2,5,5-tetramethyl-1-oxo- (CA INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
 Section cross-reference(s): 72, 74, 77

IT 46147-12-0

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
 (scandium ion-accelerated scavenging reaction of cumylperoxyl  
 radical by cyclic **nitroxyl** radical via electron  
 transfer)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3  
 CITINGS)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:1092057 HCAPLUS Full-text

DN 146:29957

TI The use of 2,2,6,6-tetramethylpiperinyl-oxides and derivatives for  
 redox shuttle additives in Li-ion cells

AU Buhrmester, Claudia; Moshurchak, L. M.; Wang, R. L.; Dahn, J. R.

CS Department of Physics and Atmospheric Science, Dalhousie University,  
 Halifax, NS, B3H 3J5, Can.

SO Journal of the Electrochemical Society (2006), 153(10), A1800-A1804  
 CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

DT Journal

LA English

AB The stable radical, 2,2,6,6-tetramethylpiperinyl oxide (TEMPO), is a  
 stable redox shuttle in Li4/3Ti5/3O4/LiFePO4 Li-ion coin cells  
 providing over 120 cycles of shuttle-protected overcharge. Derivs.  
 of TEMPO, such as 4-methoxy-TEMPO and 4-cyano-TEMPO are also stable.  
 Relatives of TEMPO, having a 5-membered ring, such as 3-cyano-  
 2,2,5,5-tetramethyl-1-pyrrolidinyloxy (3-cyano-PROXYL) show similar  
 stability. One disadvantage of these mols. is their relatively low  
 oxidation potentials, which are too close to that of LiFePO4 for com.  
 applications. Ab initio calcns. show that the redox potential of

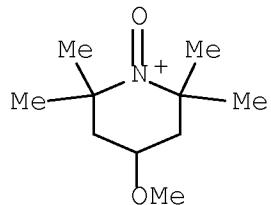
these mols. can be tailored by substitutions of F for the H atoms in the Me groups.

IT 135023-08-4

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(methylpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

RN 135023-08-4 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

ST tetramethylpiperinyl oxide deriv redox shuttle additive lithium ion  
**battery**

IT Secondary batteries

(lithium; methylpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

IT 21324-40-3, Lithium hexafluorophosphate (LiPF<sub>6</sub>) 244761-29-3,  
Lithium bis(oxalato)borate

RL: TEM (Technical or engineered material use); USES (Uses)  
(electrolyte; methylpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries with)

IT 2564-83-2, Tempo 2896-70-0, 4-Oxo-TEMPO 3225-26-1 35203-66-8  
37149-18-1 38078-71-6 135023-08-4 299895-12-8  
913815-78-8 913815-79-9 913815-81-3 913815-83-5  
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
(methylpiperinyl oxides and derivs. as redox shuttle additives for Li-ion batteries)

OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5  
CITINGS)

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2006:981494 HCAPLUS Full-text

DN 145:339158  
 TI Secondary lithium ion **battery** containing nitroxyl radical compound in electrolytic solution for overcharging resistance  
 IN Nakahara, Kentaro; Matsuu, Masaaki  
 PA Nec Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 29pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2006252917	A	20060921	JP 2005-67186	20050310

PRAI JP 2005-67186 20050310  
 AB The disclosed **battery** contains a nitroxyl radical compound in the electrolytic solution and an active mass compound having redox potential lower than the radical compound in the **cathode**. Increase of voltage in the **battery** is suppressed even under long-term overcharging.

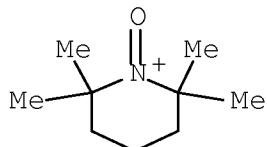
IT 863309-36-8 909534-31-2  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (lithium ion **battery** containing nitroxyl radical compound in electrolytic solution and **cathode** active mass with low redox potential for overcharging resistance)

RN 863309-36-8 HCAPLUS  
 CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide hexafluorophosphate(1-)  
 (1:1) (CA INDEX NAME)

CM 1

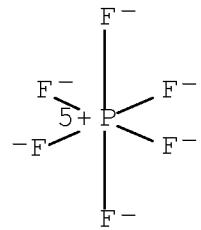
CRN 45842-10-2

CMF C9 H18 N O



CM 2

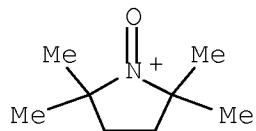
CRN 16919-18-9  
 CMF F6 P  
 CCI CCS



RN 909534-31-2 HCAPLUS  
 CN Pyrrolidinium, 2,2,5,5-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
 (9CI) (CA INDEX NAME)

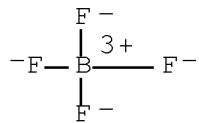
CM 1

CRN 863309-37-9  
 CMF C8 H16 N O



CM 2

CRN 14874-70-5  
 CMF B F4  
 CCI CCS



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST **cathode** active mass nitroxyl radical electrolytic soln  
 lithium **battery**; overcharging resistance lithium ion  
**battery** nitroxyl radical electrolytic soln  
 IT **Battery cathodes**  
 Electrolytic solutions  
 (lithium ion **battery** containing nitroxyl radical compound in  
 electrolytic solution and **cathode** active mass with low  
 redox potential for overcharging resistance)  
 IT Radicals, uses  
 RL: DEV (Device component use); USES (Uses)  
 (lithium ion **battery** containing nitroxyl radical compound in  
 electrolytic solution and **cathode** active mass with low  
 redox potential for overcharging resistance)  
 IT 12031-92-4, Lithium manganese oxide (Li<sub>4</sub>Mn<sub>5</sub>O<sub>12</sub>) 12162-79-7,  
 Lithium manganese oxide (LiMnO<sub>2</sub>) 15365-14-7, Iron lithium  
 phosphate (FeLiPO<sub>4</sub>)  
 RL: DEV (Device component use); USES (Uses)  
 (**cathode** active mass; lithium ion **battery**  
 containing nitroxyl radical compound in electrolytic solution and  
**cathode** active mass with low redox potential for  
 overcharging resistance)  
 IT 2406-25-9 2564-83-2 3229-53-6 27720-81-6 34549-03-6  
 38582-73-9 863309-36-8 909534-31-2  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)  
 (lithium ion **battery** containing nitroxyl radical  
 compound in electrolytic solution and **cathode** active mass  
 with low redox potential for overcharging resistance)  
 L25 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2005:902407 HCAPLUS Full-text  
 DN 143:250986  
 TI Secondary **batteries** using nitroxyl compound  
**cathode** active mass and good charge-discharge cycle  
 performance  
 IN Nakahara, Kentaro; Iriyama, Jiro; Iwasa, Shigeyuki; Suguro,  
 Masahiro; Sato, Masaharu  
 PA NEC Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
	-----				
PI	JP 2005228712	A	20050825	JP 2004-38802	20040216

PRAI JP 2004-38802 20040216

OS MARPAT 143:250986

AB The devices have nitroxyl compound **cathode** active mass where electrons are exchanged between oxidized state  $\text{N}^+:\text{O}$  and reduced state  $\text{NO}^-$ , and Li or Li alloy anode active mass, where a part of the nitroxyl compds. are dissolved in electrolytic solns. Thus, a button-type secondary Li **batteries** having a **cathode** containing carbon paper impregnated with an electrolytic solution containing 2,2,6,6-tetramethyl-1-oxopiperidinium hexafluorophosphate, a Li anode, and porous polyethylene separator impregnated with the electrolytic solution is exemplified.

IT 31198-93-3P 33247-78-8P 863309-36-8P

863309-38-0P 863309-40-4P

RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(secondary **batteries** using **nitroxyl** compound **cathode** active mass partly dissolved in electrolytic solns., and Li or Li alloy anode active mass)

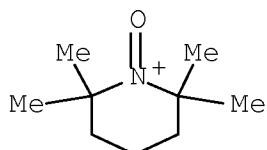
RN 31198-93-3 HCPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide perchlorate (1:1) (CA INDEX NAME)

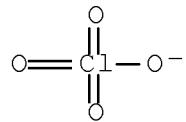
CM 1

CRN 45842-10-2

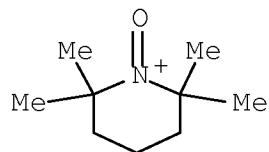
CMF C9 H18 N O



CM 2

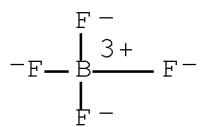
CRN 14797-73-0  
CMF Cl O4RN 33247-78-8 HCAPLUS  
CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
(1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2  
CMF C9 H18 N O

CM 2

CRN 14874-70-5  
CMF B F4  
CCI CCS



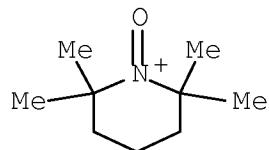
RN 863309-36-8 HCPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-, 1-oxide hexafluorophosphate(1-)  
(1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O

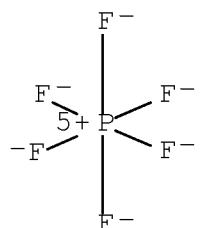


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



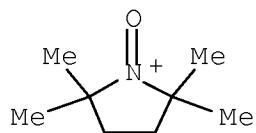
RN 863309-38-0 HCPLUS

CN Pyrrolidinium, 2,2,5,5-tetramethyl-1-oxo-, hexafluorophosphate(1-)  
 (9CI) (CA INDEX NAME)

CM 1

CRN 863309-37-9

CMF C8 H16 N O

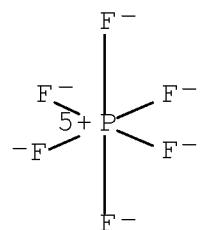


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



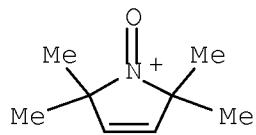
RN 863309-40-4 HCAPLUS

CN 1H-Pyrrolium, 2,5-dihydro-2,2,5,5-tetramethyl-1-oxo-,  
 hexafluorophosphate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 863309-39-1

CMF C8 H14 N O

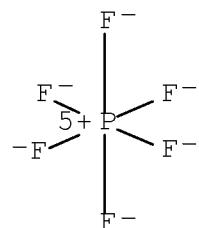


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



IC ICM H01M010-40  
 ICS H01M004-02; H01M004-38; H01M004-60; H01M004-66  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 27  
 ST lithium **battery cathode** nitroxyl compd;  
 tetramethyloxopiperidinium fluorophosphate **cathode** button  
 lithium **battery**  
 IT Secondary **batteries**  
 (button-type; secondary **batteries** using nitroxyl compound  
**cathode** active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)  
 IT Copying paper  
 (carbon paper, **cathode** current collector; secondary  
**batteries** using nitroxyl compound **cathode** active  
 mass partly dissolved in electrolytic solns., and Li or Li alloy  
 anode active mass)  
 IT Secondary **batteries**  
 (lithium; secondary **batteries** using nitroxyl compound  
**cathode** active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT Battery anodes  
 Battery cathodes  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT Lithium alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 7429-90-5, Aluminum, uses  
 RL: DEV (Device component use); USES (Uses)  
 (cathode; secondary batteries using nitroxyl  
 compound cathode active mass partly dissolved in  
 electrolytic solns., and Li or Li alloy anode active mass)

IT 7439-93-2, Lithium, uses 53680-59-4 95535-75-4, Lithium silicide  
 RL: DEV (Device component use); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 31198-93-3P 33247-78-8P 863309-36-8P  
 863309-38-0P 863309-40-4P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
 (Preparation); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 2564-83-2, 2,2,6,6-Tetramethylpiperidinyloxy  
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

IT 3229-53-6, 2,2,5,5-Tetramethylpyrrolidinyloxy 27720-81-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (secondary batteries using nitroxyl compound  
 cathode active mass partly dissolved in electrolytic  
 solns., and Li or Li alloy anode active mass)

L25 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2004:937 HCAPLUS Full-text  
 DN 140:217194  
 TI Reaction of Nitrosonium Tetrafluoroborate with Nitroxyl Radicals  
 AU Borodkin, G. I.; Elanov, I. R.; Shakirov, M. M.; Shubin, V. G.  
 CS Siberian Division, Vorozhtsov Novosibirsk Institute of Organic  
 Chemistry, Russian Academy of Sciences, Novosibirsk, 630090, Russia  
 SO Russian Journal of Organic Chemistry (Translation of Zhurnal

Organicheskoi Khimii) (2003), 39(8), 1144-1150

CODEN: RJOCEQ; ISSN: 1070-4280

PB MAIK Nauka/Interperiodica Publishing

DT Journal

LA English

AB It was established by means of multinuclear magnetic resonance method (<sup>1</sup>H, <sup>13</sup>C, <sup>19</sup>F and <sup>14</sup>N) that reaction of 2,2,6,6-tetramethyl-4-R-piperidin-1-oxyl radicals (R = H, OH, OMe, OCOPh, NHCOMe) with nitrosonium tetrafluoroborate gave rise to the corresponding 2,2,6,6-tetramethyl-1-oxo-4-R-piperidinium tetrafluoroborates. Linear correlations were found between the chemical shifts of atoms H4, C4 of cations and resp.  $\sigma_1$ -consts. of substituents R and chemical shifts of C4 atom calculated from increments of substitution. The conformational features of the generated nitrosonium cations are considered on the grounds of vicinal coupling consts. JHH and quantum-chemical calcns. by AM1 method.

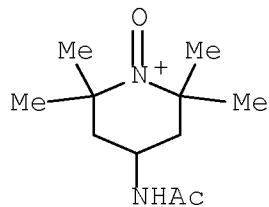
IT 136708-39-9 666179-58-4

RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate with nitroxyl radicals)

RN 136708-39-9 HCAPLUS

CN Piperidinium, 4-(acetylamino)-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



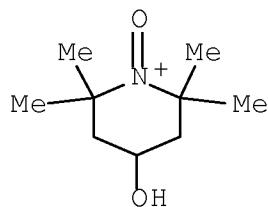
RN 666179-58-4 HCAPLUS

CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 45985-24-8

CMF C9 H18 N O2

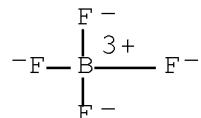


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



IT 33247-78-8 33247-81-3 45985-26-0  
 135023-09-5 219543-09-6 666179-59-5

RL: FMU (Formation, unclassified); PRP (Properties); FORM  
 (Formation, nonpreparative)

(NMR and ab initio on reaction of nitrosonium tetrafluoroborate  
 with nitroxyl radicals)

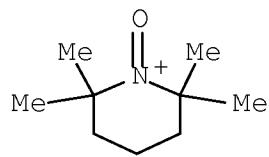
RN 33247-78-8 HCPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-)  
 (1:1) (CA INDEX NAME)

CM 1

CRN 45842-10-2

CMF C9 H18 N O

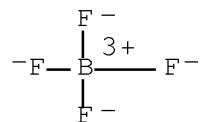


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



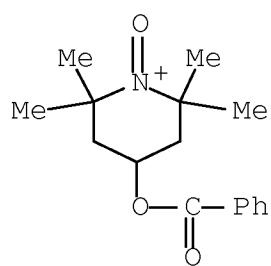
RN 33247-81-3 HCAPLUS

CN Piperidinium, 4-(benzoyloxy)-2,2,6,6-tetramethyl-1-oxo-,  
tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 47089-86-1

CMF C16 H22 N O3

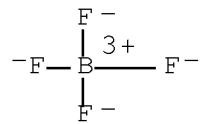


CM 2

CRN 14874-70-5

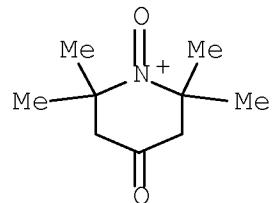
CMF B F4

CCI CCS



RN 45985-26-0 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1,4-dioxo- (9CI) (CA INDEX NAME)



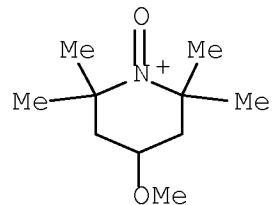
RN 135023-09-5 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 135023-08-4

CMF C10 H20 N O2

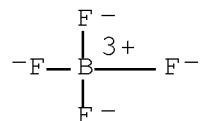


CM 2

CRN 14874-70-5

CMF B F4

CCI CCS



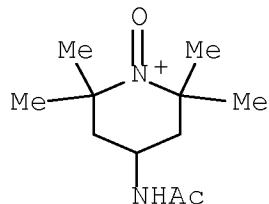
RN 219543-09-6 HCPLUS

CN Piperidinium, 4-(acetylamino)-2,2,6,6-tetramethyl-1-oxo-,  
tetrafluoroborate(1-) (1:1) (CA INDEX NAME)

CM 1

CRN 136708-39-9

CMF C11 H21 N2 O2

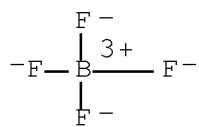


CM 2

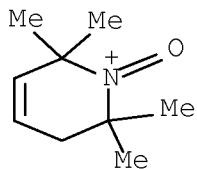
CRN 14874-70-5

CMF B F4

CCI CCS



RN 666179-59-5 HCAPLUS  
 CN Pyridinium, 1,2,3,6-tetrahydro-2,2,6,6-tetramethyl-1-oxo- (9CI) (CA  
 INDEX NAME)



CC 22-7 (Physical Organic Chemistry)  
 Section cross-reference(s): 27, 77  
 IT 136708-39-9 666179-58-4  
 RL: CPS (Chemical process); FMU (Formation, unclassified); PEP  
 (Physical, engineering or chemical process); PRP (Properties); RCT  
 (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT  
 (Reactant or reagent)  
 (NMR and ab initio on reaction of nitrosonium tetrafluoroborate  
 with nitroxyl radicals)  
 IT 33247-78-8 33247-81-3 45985-26-0  
 135023-09-5 219543-09-6 666179-59-5  
 RL: FMU (Formation, unclassified); PRP (Properties); FORM  
 (Formation, nonpreparative)  
 (NMR and ab initio on reaction of nitrosonium tetrafluoroborate  
 with nitroxyl radicals)  
 OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2  
 CITINGS)  
 RE.CNT 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT  
 L25 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2001:613303 HCAPLUS Full-text  
 DN 135:344169  
 TI Interaction of chlorine dioxide with nitroxyl radicals  
 AU Ganiev, I. M.; Timergazin, K. K.; Shereshovets, V. V.; Grigor'ev, I.

A.; Tolstikov, G. A.

CS Institute of Organic Chemistry, Ufa Research Center of the Russian Academy of Sciences, Ufa, 450054, Russia

SO Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2001), 50(4), 614-619

CODEN: RCBUEY; ISSN: 1066-5285

PB Kluwer Academic/Consultants Bureau

DT Journal

LA English

AB The formation of charge transfer complexes between chlorine dioxide and nitroxyl radicals [2,2,6,6-tetramethylpiperidin-1-oxyl, 4-hydroxy-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-oxo-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl, 4-acetylamido-2,2,6,6-tetramethylpiperidin-1-oxyl, 2,2,5,5-tetramethyl-4-phenyl-3-imidazolin-1-oxyl, and bis(4-methoxyphenyl)nitroxide] in acetone, acetonitrile, n-heptane, di-Et ether, carbon tetrachloride, toluene, and dichloromethane was found by spectrophotometry at -60 to +20°C. The thermodn. parameters of complex formation were determined. The radical structure affects its complex formation ability. The charge transfer complex is transformed into the corresponding oxoammonium salt.

IT 233280-37-0P 328557-80-8P  
 371156-05-7P 371156-06-8P 371156-08-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (charge-transfer complexation of chlorine dioxide with nitroxyl radicals and their further transformation to oxoammonium chlorites)

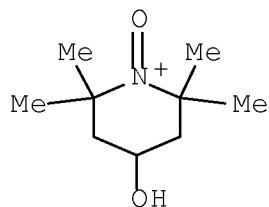
RN 233280-37-0 HCPLUS

CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (salt) (9CI) (CA INDEX NAME)

CM 1

CRN 45985-24-8

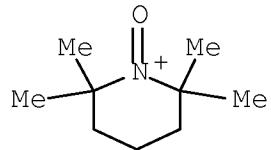
CMF C9 H18 N O2



CM 2

CRN 14998-27-7  
CMF Cl O2O=C1—O<sup>-</sup>RN 328557-80-8 HCPLUS  
CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, chlorite (CA INDEX NAME)

CM 1

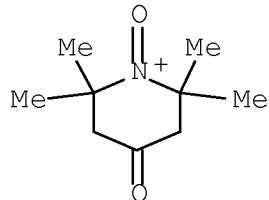
CRN 45842-10-2  
CMF C9 H18 N O

CM 2

CRN 14998-27-7  
CMF Cl O2O=C1—O<sup>-</sup>RN 371156-05-7 HCPLUS  
CN Piperidinium, 2,2,6,6-tetramethyl-1,4-dioxo-, chlorite (9CI) (CA INDEX NAME)

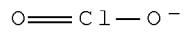
CM 1

CRN 45985-26-0  
 CMF C9 H16 N O2



CM 2

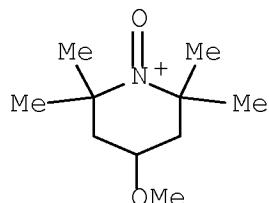
CRN 14998-27-7  
 CMF Cl O2



RN 371156-06-8 HCAPLUS  
 CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (9CI)  
 (CA INDEX NAME)

CM 1

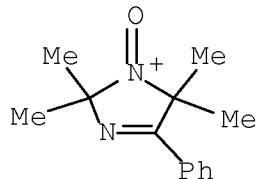
CRN 135023-08-4  
 CMF C10 H20 N O2



CM 2

CRN 14998-27-7  
CMF Cl O2O=C1—O<sup>-</sup>RN 371156-08-0 HCPLUS  
CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-1-oxo-4-phenyl-,  
chlorite (9CI) (CA INDEX NAME)

CM 1

CRN 371156-07-9  
CMF C13 H17 N2 O

CM 2

CRN 14998-27-7  
CMF Cl O2O=C1—O<sup>-</sup>CC 22-12 (Physical Organic Chemistry)  
IT 233280-37-0P 328557-80-8P  
371156-05-7P 371156-06-8P 371156-08-0P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (charge-transfer complexation of chlorine dioxide with  
 nitroxyl radicals and their further transformation to  
 oxoammonium chlorites)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2  
 CITINGS)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 2001:167234 HCAPLUS Full-text

DN 135:52639

TI Selective electrocatalytic oxidation of N-alkyl-N-methylanilines to  
 N-alkylformanilides using nitroxyl radical

AU Kashiwagi, Yoshitomo; Anzai, Jun-Ichi

CS Graduate School of Pharmaceutical Sciences, Tohoku University,  
 Sendai, 980-8578, Japan

SO Chemical & Pharmaceutical Bulletin (2001), 49(3), 324-326  
 CODEN: CPBTAL; ISSN: 0009-2363

PB Pharmaceutical Society of Japan

DT Journal

LA English

AB Electrocatalytic oxidation of N-alkyl-N-methylanilines was studied  
 using 4-benzyloxy-2,2,6,6-tetramethylpiperidinyl-N-oxyl as a  
 nitroxyl radical. The reaction with N-alkyl-N-methylanilines led to  
 direct formation of N-alkylformanilides in the presence of H<sub>2</sub>O in  
 reaction media in adequate conversion (>75.8%), high current  
 efficiency (>89.2%) and high selectivity (>93.8%).

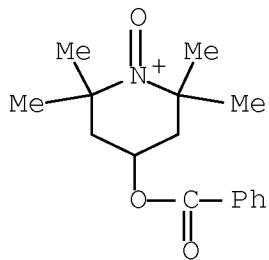
IT 47089-86-1

RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation,  
 nonpreparative); RACT (Reactant or reagent)

(electrochem. oxidative formation in selective electrocatalytic  
 oxidation of N-alkylmethylanilines to N-alkylformanilides using  
 nitroxyl radical)

RN 47089-86-1 HCAPLUS

CN Piperidinium, 4-(benzyloxy)-2,2,6,6-tetramethyl-1-oxo- (9CI) (CA  
 INDEX NAME)



CC 72-2 (Electrochemistry)  
 Section cross-reference(s): 22, 25  
 IT 47089-86-1  
 RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (electrochem. oxidative formation in selective electrocatalytic oxidation of N-alkylmethylanilines to N-alkylformanilides using nitroxyl radical)  
 OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)  
 RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT  
 L25 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1999:380262 HCAPLUS Full-text  
 DN 131:115978  
 TI Complexes of chlorine dioxide with nitroxyl radicals  
 AU Ganiev, Ilgiz M.; Timerghazin, Qadir K.; Khalizov, Alexey F.;  
 Andriyashina, Nadezhda M.; Shereshovets, Valerii V.; Volodarsky, Leonid B.; Tolstikov, Genrikh A.  
 CS Institute of Organic Chemistry, Ufa Research Centre of Russian Academy of Sciences, Ufa, Russia  
 SO Tetrahedron Letters (1999), 40(25), 4737-4740  
 CODEN: TELEAY; ISSN: 0040-4039  
 PB Elsevier Science Ltd.  
 DT Journal  
 LA English  
 AB Chlorine dioxide forms red-colored ( $\lambda_{\text{max}}=480$  nm) CT complexes with persistent piperidine and imidazoline nitroxyl radicals in di-Et ether, n-pentane, carbon tetrachloride, methylene chloride and on silica gel surface. Equilibrium consts., enthalpy and entropy of formation and extinction coefficient of the complex between ClO<sub>2</sub> and 2,2,6,6-tetramethyl-4-hydroxypiperidin-1-oxyl in di-Et ether were determined. In Et<sub>2</sub>O the complex is stable under normal conditions, in other media it transforms into the oxoammonium salt.

IT 233280-37-0

RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (CT complexes of chlorine dioxide with nitroxyl radicals as intermediates in their conversion to oxoammonium salts)

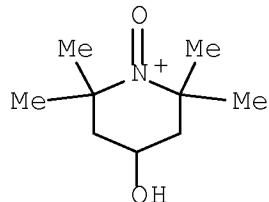
RN 233280-37-0 HCPLUS

CN Piperidinium, 4-hydroxy-2,2,6,6-tetramethyl-1-oxo-, chlorite (salt) (9CI) (CA INDEX NAME)

CM 1

CRN 45985-24-8

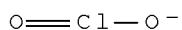
CMF C9 H18 N O2



CM 2

CRN 14998-27-7

CMF Cl O2



CC 22-12 (Physical Organic Chemistry)

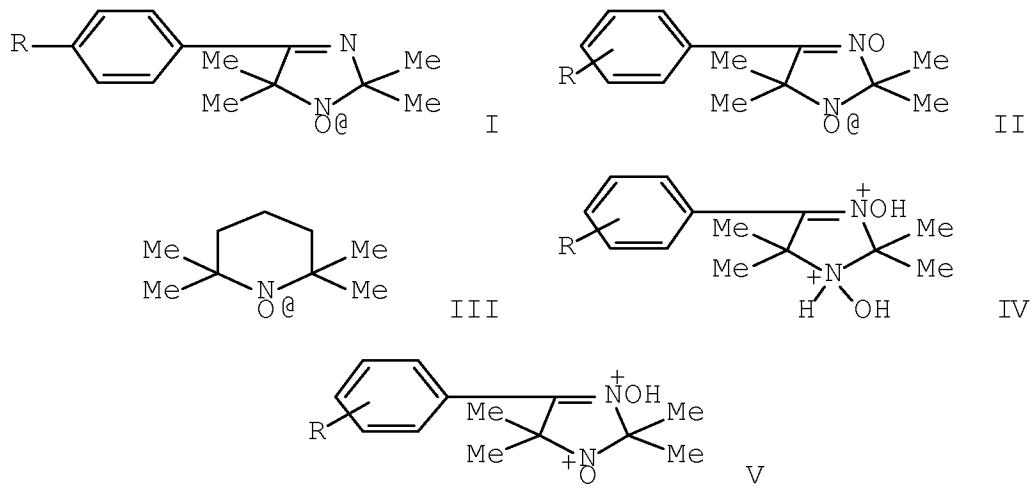
IT 233280-37-0

RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)  
 (CT complexes of chlorine dioxide with nitroxyl radicals as intermediates in their conversion to oxoammonium salts)

OSC.G 9 THERE ARE 9 CAPLUS RECORDS THAT CITE THIS RECORD (9 CITINGS)

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

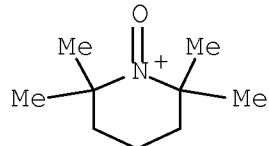
L25 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2009 ACS on STN  
AN 1987:597363 HCAPLUS Full-text  
DN 107:197363  
OREF 107:31643a,31646a  
TI Study of reactions of nitroxyl radicals in strong acids and superacids by EPR and proton and carbon-13 NMR  
AU Grigor'ev, I. A.; Shchukin, G. I.; Volodarskii, L. B.  
CS Inst. Org. Khim., Novosibirsk, USSR  
SO Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1986), (10), 2277-83  
CODEN: IASKA6; ISSN: 0002-3353  
DT Journal  
LA Russian  
GI



AB Protonation of nitroxides I ( $R = H, F$ ), II ( $R = H, 4\text{-Me}, 4\text{-F}, 4\text{-NO}_2, 2\text{-NO}_2$ , etc.), and III in strong acids or superacids gave dications, e.g., IV and V. Smaller concns. of cation radicals were also detected.  
IT 45842-10-2P 95883-71-9P 95883-74-2P  
95883-75-3P 110880-82-5P 110880-83-6P  
110880-84-7P  
RL: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, from nitroxyl radicals in acids)

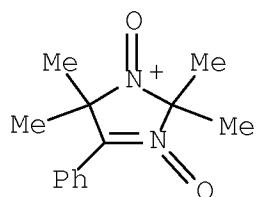
RN 45842-10-2 HCAPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



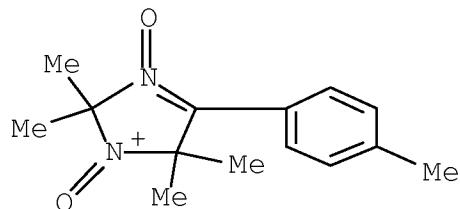
RN 95883-71-9 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-phenyl-, conjugate acid (1:1) (CA INDEX NAME)

● H<sup>+</sup>

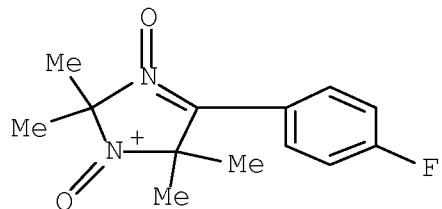
RN 95883-74-2 HCAPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-(4-methylphenyl)-, conjugate acid (1:1) (CA INDEX NAME)

● H<sup>+</sup>

RN 95883-75-3 HCPLUS

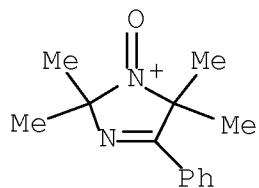
CN 1H-Imidazolium, 4-(4-fluorophenyl)-2,5-dihydro-2,2,5,5-tetramethyl-, conjugate acid (1:1) (CA INDEX NAME)



● H +

RN 110880-82-5 HCPLUS

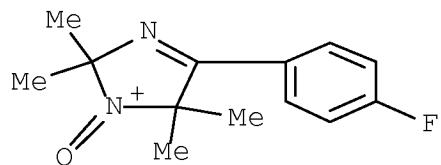
CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-phenyl-, conjugate acid (1:1) (CA INDEX NAME)



● H +

RN 110880-83-6 HCPLUS

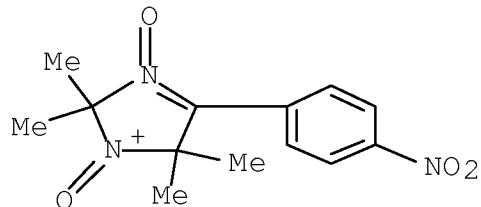
CN 1H-Imidazolium, 4-(4-fluorophenyl)-2,5-dihydro-2,2,5,5-tetramethyl-, conjugate acid (1:1) (CA INDEX NAME)



● H<sup>+</sup>

RN 110880-84-7 HCPLUS

CN 1H-Imidazolium, 2,5-dihydro-2,2,5,5-tetramethyl-4-(4-nitrophenyl)-, conjugate acid (1:1) (CA INDEX NAME)



● H<sup>+</sup>

CC 22-10 (Physical Organic Chemistry)

IT 45842-10-2P 95883-70-8P 95883-71-9P

95883-72-0P 95883-73-1P 95883-74-2P

95883-75-3P 110880-79-0P 110880-81-4P

110880-82-5P 110880-83-6P 110880-84-7P

110880-85-8P 110906-60-0P

RL: FORM (Formation, nonpreparative); PREP (Preparation)  
(formation of, from nitroxyl radicals in acids)

=> d 132 1-8 bib abs hitstr hitind

YOU HAVE REQUESTED DATA FROM FILE 'HCPLUS' - CONTINUE? (Y)/N:y

L32 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2008:309637 HCAPLUS Full-text  
 DN 150:261964  
 TI Spectral Properties of Probes Containing Benzothioxanthene Chromophore Linked with Hindered Amine in Solution and in **Polymer** Matrices  
 AU Hrdlovic, Pavol; Chmela, Stefan; Danko, Martin; Sarakha, Mohamed; Guyot, Ghislain  
 CS Polymer Institute, Slovak Academy of Sciences, Bratislava, 842 36, Slovakia  
 SO Journal of Fluorescence (2008), 18(2), 393-402  
 CODEN: JOFLEN; ISSN: 1053-0509  
 PB Springer  
 DT Journal  
 LA English  
 OS CASREACT 150:261964  
 AB Absorption and emission spectroscopy as well as laser flash photolysis was employed in order to characterize the spectral properties of novel probes based on benzothioxantheneimide chromophore covalently linked with different types of sterically hindered amines. These were chosen as 2-(2,2,6,6-tetramethyl-4-piperidyl)-thioxantheno[2,1,9- dej]isoquinoline-1,3-dione (BTXINH), the equivalent stable **nitroxyl** radical, i.e. 2-(1-oxo-2,2,6,6-tetramethyl-4-piperidyl)thioxantheno[2,1,9dej]isoquinoline 1,3-dione (BTXINO) and the alkoxy derivative 2-(1-(1'-phenylethoxy)-2,2,6,6-tetramethyl-4-piperidyl)-thioxantheno[2,1,9-dej]isoquinoline-1,3-dione (BTXINOR). Spectral properties, in solns. and in various **Polymer** matrixes such as polystyrene, polymethyl methacrylate, polyvinyl chloride and polypropylene, were compared with the compound 2-(1-dodecyl)-thioxantheno[2,1,9-dej]isoquinoline-1,3-dione (BTXID) taken in the present study as a reference compound. By means of the fluorescence decay and in the contrary to three other probes, BTXINO probe clearly showed a bi-exponential decay while the three other probes led to monoexponential decay. Two different singlet excited states with lifetimes of about 0.4 and 5 ns were proposed. They correspond to two dispositions of the **nitroxyl** radical chain above and along the fluorescent moiety of the mol. Such behavior depends on the surrounding media. Moreover, an efficient intramol. quenching of the fluorescence emission was only observed with the short lived singlet excited state. The ratio BTXID/BTXINO was found equal to about 4 and 9 in solns. and **Polymer** matrixes resp. Laser flash photolysis indicated that the novel probes as well as the model compound yielded transient absorption with maximum at 530 nm, corresponding to the triplet states. The intermol. quenching of such species by mol. oxygen and by free N-oxyl, such as 1-oxo-2,2,6,6-teramethylpiperidine

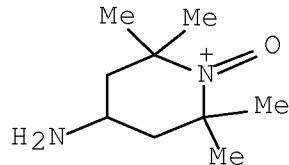
(TEMPO) and 1-oxy-2,2,6,6-tetramethyl-4-hydroxypiperidine (TEMPOL), and the intramol. quenching was not efficient.

IT 192767-74-1

RL: RCT (Reactant); RACT (Reactant or reagent)  
(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

RN 192767-74-1 HCAPLUS

CN Piperidinium, 4-amino-2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

Section cross-reference(s): 74

ST spectra benzothioxanthene chromophore linked hindered amine soln **polymer** matrix; fluorescence quantum yield stable radical **polymer** matrix

IT Flash photolysis  
(laser; spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT Fluorescence quenching  
(of anthracene by radicals; spectral properties of benzothioxanthene chromophore linked with hindered amine in solution  
and in **polymer** matrixes)

IT Chromophores

Emission spectra

Fluorescence

Fluorescent indicators

Triplet state

UV and visible spectra

(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT 55684-18-9

RL: CAT (Catalyst use); USES (Uses)

(spectral properties of benzothioxanthene chromophore linked with hindered amine in solution and in **polymer** matrixes)

IT 9002-86-2, PVC 9003-07-0, Polypropylene 9003-53-6, Polystyrene

9011-14-7, PMMA  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

IT 120-12-7, Anthracene, properties 2226-96-2, TEMPOL 2564-83-2,  
 TEMPO  
 RL: PEP (Physical, engineering or chemical process); PRP  
 (Properties); PROC (Process)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

IT 266358-78-5P 881205-96-5P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation);  
 PREP (Preparation); RACT (Reactant or reagent)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

IT 52222-05-6P 1120349-57-6P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP  
 (Preparation)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

IT 100-42-5, Styrene, reactions 124-22-1, Dodecylamine 14121-49-4  
 36768-62-4, 4-Amino-2,2,6,6-tetramethylpiperidine  
 192767-74-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

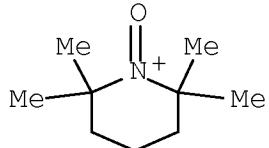
IT 16940-66-2  
 RL: RGT (Reagent); RACT (Reactant or reagent)  
 (spectral properties of benzothioxanthene chromophore linked with  
 hindered amine in solution and in **polymer** matrixes)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2  
 CITINGS)

RE.CNT 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 2 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 2007:778762 HCAPLUS Full-text  
 DN 147:323382  
 TI Towards controlled graft **polymerization** of  
 poly[styrene-co-(maleic anhydride)] on functionalized silica  
 mediated by oxoaminium bromide salt. Facile synthetic pathway using  
 nitroxide chemistry  
 AU Bonilla-Cruz, Jose; Lara-Ceniceros, Tania; Saldivar-Guerra, Enrique;  
 Jimenez-Regalado, Enrique  
 CS Centro de Investigacion en Quimica Aplicada (CIQA), Coahuila, 25253,  
 Mex.  
 SO Macromolecular Rapid Communications (2007), 28(13), 1397-1403

PB CODEN: MRCOE3; ISSN: 1022-1336  
 DT Wiley-VCH Verlag GmbH & Co. KGaA  
 LA Journal  
 English  
 AB A TEMPO bromide salt is used to functionalize a silica surface with **nitroxyl** moieties. The functionalization reaction takes place in 48 h under mild conditions. In a second step, grafts of styrene-maleic anhydride **copolymer** are grown from the functionalized silica surface by heating it in the presence of the monomers. FT-IR and TGA anal. show that the silica was first functionalized with nitroxide moieties, and then that grafts of styrene-maleic anhydride grew from the functionalized silica surface. A reaction mechanism is proposed in order to explain the findings. The results suggest that the oxoaminium salts are good candidates for the functionalization and grafting of surfaces that contain hydroxy groups and for the generation of hybrid materials with improved properties.  
 IT 85917-27-7DP, surface reaction product with silica  
 RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)  
 RN 85917-27-7 HCPLUS  
 CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo-, bromide (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 37  
 ST TEMPO functionalized silica surface graft styrene maleic anhydride **copolymer**  
 IT Composites  
 Molecular weight  
 Polydispersity

Polymer chains

Thermal stability

(facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

IT Polymerization

(graft, surface; facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

IT 85917-27-7DP, surface reaction product with silica

RL: CAT (Catalyst use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

IT 7631-86-9DP, Silica, TEMPO-functionalized

RL: CAT (Catalyst use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

IT 2564-83-2 7726-95-6, Bromine, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

IT 9011-13-6P, Maleic anhydride-styrene **copolymer**

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(graft on silica surface; facile synthetic pathway using nitroxide chemical towards controlled graft **polymerization** of poly[styrene-co-(maleic anhydride)] on functionalized silica mediated by oxoaminium bromide salt)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L32 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1994:324380 HCAPLUS Full-text

DN 120:324380

OREF 120:57097a,57100a

TI Synthesis of Polystyrene Having an Aminoxy Terminal by the Reactions of Living Polystyrene with an Oxoaminium Salt and with the Corresponding **Nitroxyl** Radical

AU Yoshida, Eri; Ishizone, Takashi; Hirao, Akira; Nakahama, Seiichi; Takata, Toshikazu; Endo, Takeshi

CS Department of Polymer Chemistry, Tokyo Institute of Technology, Tokyo, 152, Japan

SO Macromolecules (1994), 27(12), 3119-24

CODEN: MAMOBX; ISSN: 0024-9297

DT Journal

LA English

AB In order to introduce the C-O-N linkage at the **polymer** chain end, the reactions of poly(styryllithium) with 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium salt (OAS) and with the corresponding **nitroxyl** radical (MTEMPO) were investigated in THF at -78 °. The aminoxy terminal group was introduced quant. by the reactions of the living **polymer** with OAS in the presence of MTEMPO. The reactions proceed via one-electron transfer from the polystyryl anion to OAS, resulting in the **polymer** radical, which is coupled with MTEMPO, to yield the polystyrene with an aminoxy terminal. Similarly, the electron-transfer reaction proceeded between poly(styryllithium) and MTEMPO to yield the aminoxy-terminated polystyrene quant. The resulting polystyrene could initiate the radical **polymers**. of Me, Et, and Bu acrylates to give the corresponding block **copolymers**.IT 148537-46-6DP, 4-Methoxy-2,2,6,6-tetramethyl-1-oxopiperidinium hexafluoroantimonate, reaction products with polystyrene  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and block **polymerization** of, with acrylates)

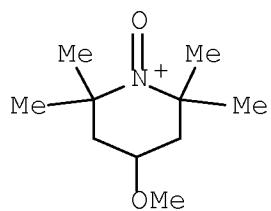
RN 148537-46-6 HCAPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, (OC-6-11)-hexafluoroantimonate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 135023-08-4

CMF C10 H20 N O2

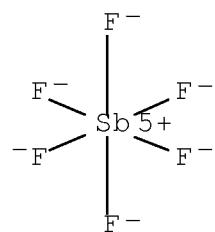


CM 2

CRN 17111-95-4

CMF F6 Sb

CCI CCS



CC 35-8 (Chemistry of Synthetic High Polymers)

ST aminoxy terminated polystyrene block polymer;

oxomethoxytetramethylpiperidinium reaction polystyrene;

methoxytetramethylpiperidinoxyl reaction polystyrene

IT 9003-53-6DP, Polystyrene, aminoxy-terminated 95407-69-5DP,  
4-Methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl, reaction products  
with polystyrene 148537-46-6DP,

4-Methoxy-2,2,6,6-tetramethyl-1-oxopiperidinium

hexafluoroantimonate, reaction products with polystyrene

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
RACT (Reactant or reagent)

(preparation and block polymerization of, with acrylates)

IT 110772-34-4P, Butyl acrylate-styrene block copolymer

111740-42-2P, Methyl acrylate-styrene block copolymer

114397-35-2P, Ethyl acrylate-styrene block copolymer

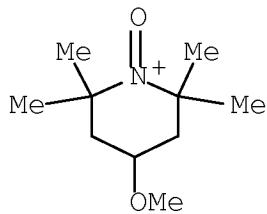
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of, using aminoxy-terminated polystyrene)

OSC.G 55 THERE ARE 55 CAPLUS RECORDS THAT CITE THIS RECORD (55)

## CITINGS)

L32 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1993:255497 HCAPLUS Full-text  
 DN 118:255497  
 OREF 118:44425a, 44428a  
 TI Oxidation of poly(vinyl alcohol) with an oxoammonium salt  
 AU Yoshida, Eri; Yamaguchi, Masao; Takata, Toshikazu; Endo, Takeshi  
 CS Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama, 227, Japan  
 SO Makromolekulare Chemie (1993), 194(5), 1307-14  
 CODEN: MACEAK; ISSN: 0025-116X  
 DT Journal  
 LA English  
 AB Oxidation of poly(vinyl alc.) (I) with 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium chloride (II) prepared by a 1-electron oxidation of the corresponding **nitroxyl** radical was carried out. I with d.p. 300 and degree of saponification (DS) 88 mol% was oxidized with II in the presence of Mg(ClO<sub>4</sub>)<sub>2</sub> in N-methyl-2-pyrrolidone to obtain a **polymer** containing 66 mol% ketone units. The oxidation was dependent on solvent and inorg. additive and DS of I but independent of d.p. In the case of I with extremely low (10 mol%) or high (98.5 mol%) DS, no or little oxidation took place. The highest ketone content was obtained in a **polymer** with DS 88 mol%. The ketone content could be controlled by the amount of II.  
 IT 95407-70-8  
 RL: USES (Uses)  
 (oxidizing agents, for saponified poly(vinyl acetate))  
 RN 95407-70-8 HCAPLUS  
 CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-, 1-oxide chloride (1:1)  
 (CA INDEX NAME)



● Cl<sup>-</sup>

IT 95407~70~8

RL: USES (Uses)

(oxidizing agents, for saponified poly(vinyl acetate))

L32 ANSWER 5 OF 8 HCPLUS COPYRIGHT 2009 ACS on STN

AN 1992:651935 HCPLUS Full-text

DN 117:251935

OREF 117:43639a,43642a

TI Oxidation of **polymeric** terminal diols with iron(III) or copper(II) salts mediated by the **nitroxyl** radical

AU Yoshida, Eri; Takata, Toshikazu; Endo, Takeshi

CS Res. Lab. Resour. Util., Tokyo Inst. Technol., Yokohama, 227, Japan

SO Macromolecules (1992), 25(26), 7282-5

CODEN: MAMOBX; ISSN: 0024-9297

DT Journal

LA English

AB 4-Substituted-2,2,6,6-tetramethylpiperidine-1-oxyl (I) is a stable radical mediating a reversible redox reaction between oxoaminium salt and hydroxylamine. The oxidation of **polymeric** terminal diols with Fe(III) or Cu(II) salts mediated by I is carried out to obtain the corresponding **polymers** containing carbonyl moieties. When 4 equiv of Cu(NO<sub>3</sub>)<sub>2</sub>, 1 equiv of Cu(OH)<sub>2</sub> acid-trapping agent, and 0.2 equiv of I (4-methoxy derivative) are used, a hydrogenated polybutadiene terminal diol is efficiently and selectively oxidized to the corresponding **polymer** with aldehyde or ketone groups in both termini without any intermol. reaction. Furthermore, I supported on crosslinked polystyrene beads catalyzed efficiently the oxidation of hydrogenated polybutadiene diol.

IT 144375-62-2P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of and oxidation of hydrogenated polybutadiene diol with)

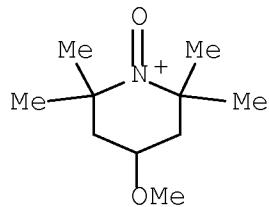
RN 144375-62-2 HCPLUS

CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-1-oxo-, nitrate (9CI)  
(CA INDEX NAME)

CM 1

CRN 135023-08-4

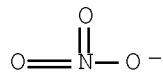
CMF C10 H20 N O2



CM 2

CRN 14797-55-8

CMF N O3



CC 35-8 (Chemistry of Synthetic High Polymers)

ST oxidn polydiol **nitroxyl** radical catalyst; polybutadiene hydrogenated diol oxidn **nitroxyl**; iron **nitroxyl** catalyst oxidn polydiol; copper nitroxy catalyst oxidn polydiolIT Oxidation catalysts  
(**nitroxyl** radical and iron or copper, for polymeric terminal diols)IT Oxidation  
(of polymeric terminal diols, in presence of **nitroxyl** radical and iron or copper)IT Polyesters, reactions  
Polyoxyalkylenes, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(oxidation of, in presence of **nitroxyl** radical and iron or copper)IT Rubber, butadiene, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(hydroxy-terminated, oxidation of, in presence of **nitroxyl** radical and iron or copper)IT 20427-59-2, Copper hydroxide (Cu(OH)2)  
RL: USES (Uses)  
(acid-trapping agents, for **nitroxyl** radical-catalyzed oxidation of polymeric terminal diols)

IT 95407-69-5

RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, containing iron or copper salts, for oxidation of polymeric terminal diols)

IT 3251-23-8 7447-39-4, Copper chloride (CuCl<sub>2</sub>), uses 7705-08-0,  
 Iron trichloride, uses 10028-22-5 10421-48-4 11129-27-4,  
 Copper bromide 13746-66-2 13770-18-8

RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, containing nitroxyl radical catalysts, for oxidation of polymeric terminal diols)

IT 2226-96-2, 4-Hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl

RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, crosslinked polystyrene bead-supported, for oxidation of polymeric terminal diols)

IT 9003-17-2D, Polybutadiene, hydrogenated, diol 24936-97-8, Adipic acid-1,4-butanediol copolymer, sru 24979-97-3  
 25103-87-1, Adipic acid-1,4-butanediol copolymer  
 25190-06-1, THF polymer, sru

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (oxidation of, in presence of nitroxyl radical and iron or copper)

IT 144375-62-2P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of and oxidation of hydrogenated polybutadiene diol with)

IT 9003-17-2

RL: USES (Uses)  
 (rubber, hydroxy-terminated, oxidation of, in presence of nitroxyl radical and iron or copper)

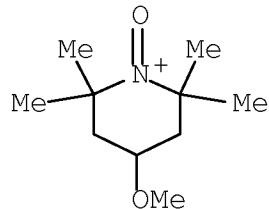
IT 29464-22-0, (p-Chloromethyl)styrene-styrene copolymer

RL: USES (Uses)  
 (supports, for hydroxytetramethylpiperidineoxyl catalysts, for oxidation of polymeric terminal diols)

OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

L32 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1992:236311 HCAPLUS Full-text  
 DN 116:236311  
 OREF 116:40061a,40064a  
 TI Efficient and selective oxidation of a polymeric terminal diol with copper(II) mediated by nitroxyl radical  
 AU Yoshida, Eri; Takata, Toshikazu; Endo, Takeshi  
 CS Res. Lab. Resourc. Util., Tokyo Inst. Technol., Yokohama, 227, Japan  
 SO Journal of Polymer Science, Part A: Polymer Chemistry (1992),  
 30(6), 1193-7  
 CODEN: JPACEC; ISSN: 0887-624X

DT Journal  
 LA English  
 AB 4-Methoxy-2,2,6,6-tetramethylpiperidin-1-oxyl and 1-oxo-4-methoxy-2,2,6,6-tetramethylpiperidinium chloride were effective catalysts for the oxidation of hydroxy groups of hydroxy-terminated hydrogenated polybutadiene with Cu(ClO<sub>4</sub>)<sub>2</sub>, CuCl<sub>2</sub>, CuBr<sub>2</sub>, or Cu(NO<sub>3</sub>)<sub>2</sub>. The catalysts were not effective with Cu(OH)<sub>2</sub>, CuSO<sub>4</sub>, or Cu(OAc)<sub>2</sub>.  
 IT 95407-70-8  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for oxidation of hydroxy-terminated hydrogenated polybutadiene with copper salt)  
 RN 95407-70-8 HCAPLUS  
 CN Piperidinium, 4-methoxy-2,2,6,6-tetramethyl-, 1-oxide chloride (1:1)  
 (CA INDEX NAME)



● Cl<sup>-</sup>

CC 35-8 (Chemistry of Synthetic High Polymers)  
 IT 95407-69-5 95407-70-8  
 RL: CAT (Catalyst use); USES (Uses)  
 (catalysts, for oxidation of hydroxy-terminated hydrogenated polybutadiene with copper salt)  
 L32 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN  
 AN 1988:120887 HCAPLUS Full-text  
 DN 108:120887  
 OREF 108:19675a,19678a  
 TI Electrochemical oxidation of carbinols mediated by **nitroxyl** radicals in solution or bonded to polypyrrolic coatings on platinum and carbon electrodes  
 AU Deronzier, Alain; Limosin, Daniele; Moutet, Jean Claude  
 CS Lab. Electrochim. Org. Photochim. Redox, Univ. Sci. Technol. Med. Grenoble, Saint Martin d'Heres, 38402, Fr.  
 SO Electrochimica Acta (1987), 32(11), 1643-7

CODEN: ELCAAV; ISSN: 0013-4686

DT Journal

LA English

AB Electrochem. oxidation of carbinols mediated by the 2,2,5,5-tetramethyl-3-pyrrolin-1-oxyl, via its nitrosonium ion, were investigated. Studies were carried out with the mediator either in solution or deposited in a film form at the surface of an electrode by **electropolymer**. of a monomer containing pyrrole groups covalently bonded to the **nitroxyl** moiety.

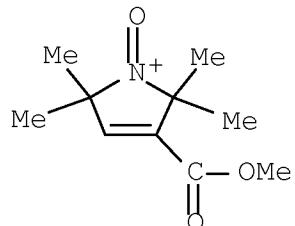
IT 46247-55-6

RL: PRP (Properties)

(electrooxidn. of methoxybenzyl alc. in presence of)

RN 46247-55-6 HCAPLUS

CN 1H-Pyrrolium, 2,5-dihydro-3-(methoxycarbonyl)-2,2,5,5-tetramethyl-1-oxo- (9CI) (CA INDEX NAME)



CC 72-2 (Electrochemistry)

Section cross-reference(s): 22, 25

IT Oxidation, electrochemical

(of carbinols, mediated by **nitroxyl** radicals in solution or bonded to **polypyrrolic** coatings on platinum and carbon electrodes)

IT 46247-55-6 101966-15-8

RL: PRP (Properties)

(electrooxidn. of methoxybenzyl alc. in presence of)

IT 101966-14-7

RL: RCT (Reactant); RACT (Reactant or reagent)

(polymerization of, electrochem., on platinum or glassy carbon electrodes, for oxidation of carbinols)

OSC.G 29 THERE ARE 29 CAPLUS RECORDS THAT CITE THIS RECORD (29 CITINGS)

L32 ANSWER 8 OF 8 HCAPLUS COPYRIGHT 2009 ACS on STN

AN 1980:163248 HCAPLUS Full-text

DN 92:163248

OREF 92:26453a,26456a

TI Determination of components of g- and A-tensors and rotational mobility of **nitroxyl** radicals by the 2-MM EPR spectroscopic method

AU Grinberg, O. Ya.; Dadali, A. A.; Dubinskii, A. A.; Vasserman, A. M.; Buchachenko, A. L.; Lebedev, Ya. S.

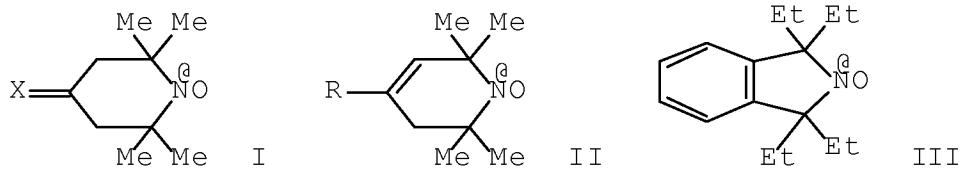
CS Inst. Khim. Fiz., Moscow, USSR

SO Teoreticheskaya i Eksperimental'naya Khimiya (1979), 15(5), 583-8  
CODEN: TEKHA4; ISSN: 0497-2627

DT Journal

LA Russian

GI

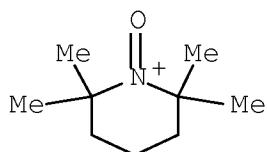
AB The g- and A-tensor components were determined for I ( $X = H_2, O$ ), II ( $R = Ph, PhC.tplbond.C, PhC.tplbond.CC.tplbond.C$ ), and III in natural rubber and toluene matrixes. To determine rotational correlation times in the  $4 + 10^{-12}$  to  $6 + 10^{-11}$  s range the mm ESR region must be used. For  $6 + 10^{-11}$  to  $3 + 10^{-10}$  s times both the 2 mm and 3 cm regions are convenient; for times  $>3 + 10^{-10}$  s the 3 cm region is more convenient. The use of correlation times in spin probe studies of mol. dynamics in nonviscous liqs. and dilute **polymer** solns. may be possible.

IT 45842-10-2

RL: PRP (Properties)  
(ESR tensor components of)

RN 45842-10-2 HCPLUS

CN Piperidinium, 2,2,6,6-tetramethyl-1-oxo- (CA INDEX NAME)



CC 22-2 (Physical Organic Chemistry)  
Section cross-reference(s): 68  
ST nitroxyl ESR tensor rotation; rotation nitroxyl  
correlation time  
IT Spin, electronic  
(correlation of, in nitroxyl radicals)  
IT Molecular rotation  
(of nitroxyl radical, ESR in relation to)  
IT Electron spin resonance  
(of nitroxyl radicals, tensor components in)  
IT 22104-03-6 45842-10-2 69116-03-6 69116-04-7  
69116-09-2  
RL: PRP (Properties)  
(ESR tensor components of)  
OSC.G 1 THERE ARE 1 CAPIUS RECORDS THAT CITE THIS RECORD (1  
CITINGS)

&gt;=